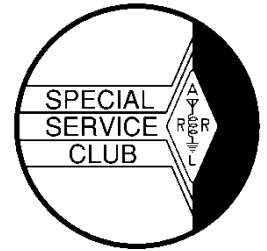




# The *ORC* Newsletter

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ORC Repeaters on 146.97 (-127.3PL), 224.18 (-127.3PL), 443.75 MHz (+127.3PL) - Callsign W9CQO

Web site: [www.ozaukeeradioclub.org](http://www.ozaukeeradioclub.org)

Facebook: [facebook.com/orcwi](https://facebook.com/orcwi)

Volume XXXII

February, 2020

Number 2

## From the President

de Pat Volkman, W9JI



At the start of this New Year, we have elected some new and returning officers for the Ozaukee Radio Club. We also have a number of members continuing to serve on our various Committees. On behalf of the Club, thanks to all of you who have decided to donate your time and energy to the Club, both past and present.

The position of Club Historian is currently open. If you have an interest in helping with the preservation of the history of the ORC, please contact me.

Stan Kaplan, WB9RQR will continue to run the monthly auction. The auction is an opportunity for members to pass on radio and computer-related items that they no longer need to others in the club. Auctioned items are donated to the Club and then sold to benefit two organizations. Half of the money raised goes to the Ozaukee Radio

Club Scholarship Fund and the other half goes to OZARES to support their emergency communication work.

Please keep in mind that items for the auction are first donated to the club. If you have an item of your own that you would like to sell, you can list that item in the Club newsletter or on the email reflector. If you have any questions, please contact Stan at [wb9qr@att.net](mailto:wb9qr@att.net) prior to the auction.

At a recent Board meeting, we formed a Repeater Committee to provide some input and direction to the Club on the future of the ORC repeater system. The committee will be composed of a cross section of Club members – old timers, newcomers, young and old to incorporate a variety of viewpoints and interests. The job of the Committee would initially be to:

- Survey club members to understand their level of interest in the repeater system.
- Do an assessment of the current state of the repeater equipment to define maintenance needs.
- Develop an estimate of maintenance costs as input to the Club budget.
- Develop a plan, with input from the Club, for the future direction of the ORC repeater system.

If you are interested in helping with the Repeater Committee please contact Committee Chair Mike Harrington, KD9GCN.

As the new president of the Ozaukee Radio Club I am looking forward to getting to know you better and to understand what you want to get out of your radio club. I encourage you to contact me with your thoughts and suggestions.

See you at the next meeting.

Pat Volkman, W9JI email: [w9ji@arrl.net](mailto:w9ji@arrl.net)

# DX'ing & Contesting

*De Gary Sutcliffe (W9XT)*



The focus of this month will be an event that happens next month, the Wisconsin QSO Party. It starts at 1:00 PM Sunday, March 15, and runs until 8:00 PM. Mark it on your calendar right now before you forget.

This is the one contest that focuses on Wisconsin hams. It is also one that every licensed member of the ORC can participate in and contribute to a club win. Years ago, Bob, W9LO, was a cheerleader for the ORC in the WIQP, and we did very well against clubs in the state. Last year we got a bit of an effort going, and we came close to winning it. Let's make 2020 the year

ORC is on top!

The basic idea is to work as many other stations as we can. We can work other stations in Wisconsin and around the world. Everyone else will be looking for Wisconsin stations. In most contests we are not rare or the target for others operating the contest. That makes the WIQP especially fun.

You will be sending your county as the exchange. Each county you work is a multiplier, as well as every state and Canadian province. The score will be QSO points times the total number of Wisconsin counties, US states, and Canadian provinces. You can work a station on a voice mode and again on either CW or a digital mode per band.

Phone contacts are worth one point, and CW and digital contacts are worth two points. Note that FT8 and FT4 contacts are not allowed for this contest so you will have to use RTTY, PSK31 or something else if you want to go digital. I have never tried the digital modes for this contest, so I can't give any advice on it.

Although most of the action will be on HF, VHF is also a way to get on and make some points for the club. You can work other stations on simplex off the national calling frequencies. They have suggested frequencies in the official rules for 6 M, 2M, 220, and 440 MHz.

If you have VHF mobile capabilities, you can have even more fun if the weather is good for a drive. Each time you move into a new county, you can work everyone again. In addition, if you make at least 12 contacts outside your home county, you can claim 500 bonus points for that county. Doing a mobile operation can be a fun way to spend a Sunday afternoon. Plan your route to maximize the number of counties you can hit with the minimum amount of miles. Plan stops at high locations where you can increase the range you can work. Be safe. Don't operate while driving, or have someone else drive while you operate.

For HF operators, most of the action will be on 80, 40, and some 20 Meters. It is hard to say if 40 or 80 will be the most important band. It depends on conditions that day, and you want to be ready for both. You will work the majority of Wisconsin stations on 80 and 40. These bands will go long as darkness approaches so try to operate early. You will find 20 Meters important for working the other states and Canadian provinces. Make short (~20 minute) trips to 20 then go back to 40 or 80. You want to work the HF mobiles on from Wisconsin. More on them later.

If you can, split your time between phone and CW. CW contacts are worth twice as many points, but many of the counties will only have a single operator who only operates on phone. You will also find

that it slows down as you work all the CW stations on the air. I tend to operate most of my phone time in the last few hours, especially when it gets dark, and most of the action is on 80.

Whatever bands and modes you use, spend at least some time calling CQ. Out of state operators rarely call CQ, They are looking for your CQ. Remember, we are the stations they are hunting. If the VHF frequency is quiet, make sure to shout out, especially if you are mobile and just arrived in a new county.

Some of the state counties are very rare, and there won't be a ham on from there. There will be an HF mobile station passing through most of them. Several mobile contesters make a big deal of this and plan their trips to hit as many rare counties as possible. You can snag them if you are ready for them and have a bit of luck. Most of the rare ones are in the northern part of the state.

Because of the rules and bonus points, mobiles want to get into a county, work 12 stations for the bonus, then move to the next county. They usually only spend an extended amount of time if they have to drive many miles to the next one. Mobile HF stations are not especially efficient because of limited antenna size. They will usually start on 20M CW because that is the most effective band and mode for them. They will skip over us and work a bunch of W4 and W5 stations to meet their quota. This is very frustrating for us in the southern part of Wisconsin. Later they will be forced to move to 40 and 80, giving us a better chance.

You are allowed to use spotting assistance in the WIQP, so use it if you have it to keep track of the mobile stations. Some of the mobiles also use APRS, which will allow you to see where they are, but APRS does not tell you which band or frequency they are on. Typically they will have favorite frequencies and will stay near them as much as possible for the whole contest.

There are three power levels. QRP is up to 5 watts, and you multiply your QSO points by 2 if you stay at this power level. Low power is 6 to 150W, and the multiplier is 1.5. Above that, the multiplier is 1. I have found the low power category is the best compromise for being loud and getting a power multiplier.

The WARAC, which sponsors the WIQP, prefers electronic logs. You can send in a paper log if you have less than 50 contacts. N3FJP (the logging program used at the ORC FD) has a version for the WIQP. It costs about \$8. N1MM+ is free and handles the WIQP, but is more complex to set up. If you want, log on paper, and then use one of the programs available to enter the QSOs and create a Cabrillo file and email that in.

I have just touched on the high points of the WIQP. Check out the full rules along with some other resources at <http://www.warac.org/wqp/wqp.htm>

In summary here are the important things to do:

- 1. Get on and make some contacts for the ORC.**
- 2. Send in your log by the March 29 deadline.**
- 3. Make sure your entry specifies the Ozaukee Radio Club as your club.**

The big contest in February is the ARRL DX CW contest. It starts at 0000 UTC on February 15. That is 6:00 PM Friday the 14<sup>th</sup> and runs for 48 hours. Work DX stations on 160-10M, excluding the WARC bands. We send a signal report and our state. DX stations send the signal report and their power level. Do not work US or Canadian stations, but KH6, KL7, KP4, etc., count as DX.

There are many different operating categories. Check out the rules at <http://www.arrl.org/arrl-dx>

I really like this contest. The DX stations are concentrating on working us, unlike the CQWW, where they can work each other. That does cut down the DX activity somewhat there. Last year I placed #4 in the US low power, assisted category, and will see if I can improve on it this year.

The phone version of the ARRL DX Contest is March 7-8, which is probably before the next newsletter comes out.

There are two contests on the last weekend of February. The NAQP RTTY is Saturday, February 29. The CQ 160M Phone contest starts Friday afternoon, February 28. Other mode versions of these were covered last month.

There are some interesting DXpeditions in February. Palestine is on the air until February 17 using the call E44CC. 160-10M, CS SSB, RTTY, and FT8/4.

Two groups are one from Tanzania. The first group is composed of primarily Italians will be there until the 18<sup>th</sup>. They are using the calls 5I5TT on CW, SSB, and RTTY. 5I4ZZ is the call they are using on FT8/4 and has been pretty active.

The other Tanzanian operation is being put on by a group of Czech ops. 5H4WZ will be on 160-10M, CW, SSB, RTTY, and FT8 with three stations. They will also be in the ARRL DX contest. They will also be there until February 18.

The big DXpedition of the month is to South Orkney. These are a group of Antarctic Islands about 1300 miles south east of the southern tip of Argentina. Operations to Antarctic islands are infrequent due to the difficulty and costs of running them. The last operation there was 2011. It is #16 on the all-time needed list.

A large group of mostly American hams will be putting this on. They will be on 160-10M, SSB, CW, RTTY, and FT8. The expected dates are February 21-March 6. Landing can be difficult in these areas, so delays in getting started are not unusual. The call sign will be VP8PJ. You want to put this on in the log because it might be quite a while before the opportunity happens again.

That wraps up February. The ground hog saw his shadow, so we have six more weeks of winter. You might as well spend some of it on the radio.

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## **Wisconsin QSO Party, March 15<sup>th</sup>, 1:00-8:00 PM**

Get on and make some points for the ORC! We can win the state club competition if we get as many members operating it as possible. Even if you only have an HT, you can help out the club! Rules at <http://www.warac.org/wqp/wqp.htm>

-Gary, W9XT

# THE COMPUTER CORNER

## No. 263: Update your Linux Installation

Stan Kaplan, WB9RQR 715 N. Dries Street Saukville, WI 53080-1664  
(262) 268-1949 [wb9rqr@att.net](mailto:wb9rqr@att.net)



The world's most popular Linux installation is 19.2, Cinnamon, "Tina", and most ORC members with Linux are using it. Well, 19.3 is out, and the Linux Team has made it easy to upgrade from any version 19 release (19, 19.1 or 19.2). That means you do not have to erase or overwrite an old version or reformat your hard drive. Rather, in the space of a few minutes, you can simply upgrade to 19.3 while still running your old version. Here is how I did it on three computers, which worked perfectly well and quickly, even if it did deviate a bit from the "official" way listed at the Linux Mint Blog (<https://blog.linuxmint.com>).

1. If you use system snapshots, use Timeshift to create one before the upgrade. Timeshift takes snapshots of the system at intervals of your choosing (mine is set to daily). If anything goes wrong, you can use Timeshift to restore your system to a previous state. Obviously, if you don't use system snapshots, ignore this Timeshift step.
2. Temporarily disable your screensaver, because, if it kicks in during the update, it will stop the process. You can enable it again when the update is done. If you plan on staying in front of the machine during the update so that you can monitor progress and wiggle the mouse if the screensaver clicks in, you can skip this step.
3. Make sure your Cinnamon spices (applets, desklets, extensions and themes) are all updated. Use the System Settings to make sure of this.
4. Find the Update Manager icon in the tray and left-click it. Click the refresh option at the top of the ensuing screen and download/install any updates to your (old) Linux operating system. If there were any really heavy duty updates, you may be asked to reboot. This is rare, but do it if asked. Get back into the Update Manager screen if you did need to reboot. In any case, when finished making sure updates are done, click the Edit button and select the "Upgrade to Linux Mint 19.3 Tricia" sentence. You are on your way. Follow any on-screen instructions. If asked whether to keep or replace configuration files, choose to replace them.
5. Add any packages you might want. For example, celluloid, gnote, drawing and neofetch were added to 19.3, so if you want to install them (probably a good idea), open a terminal (usually the 3<sup>rd</sup> icon in the tray) and type: `apt install celluloid gnote drawing neofetch`. Hit return and type exit when the machine is done, to close the terminal. You can then reboot to completely activate your upgrade, necessary because this is a major system change. You are done. I bet you can do it in under 20 minutes!

By the way, in reading dozens of comments in the Linux Mint Blog (referenced above in the first paragraph; just hit ctrl-click to follow the link), it is clear that this release is a winner and generally easy to install. This release (19.3) is guaranteed to be supported to 2023, so you don't need to worry about it being replaced in a month!

Happy Computing!



# UPCOMING EVENTS

**Breakfast at Jim's Grille in Cedarburg – Saturdays at 7:00 AM**

## **Upcoming ORC Monthly Programs**

*February - Bill W9MXQ, Video Presentation on R.L. Drake Company*

*March – Vic WT9Q, Selecting & Installing a Vertical Antenna*

*April - Gary W9XT, Soldering*

## **Presenters Needed!**

de Pat Volkmann, W9JI

The monthly program is the highlight of the Ozaukee Radio Club meeting. We are fortunate to have a number of very talented people in our club, many of whom have shared their knowledge through a presentation. Share your expertise and experience with the club. Programs can be on any topic that is ham radio related. Contact Pat Volkmann W9JI at [w9ji@arrl.net](mailto:w9ji@arrl.net) to discuss your idea for a program.

**Sterling-Rock Falls Hamfest – Sun., March 8<sup>th</sup>, 7:30 AM**

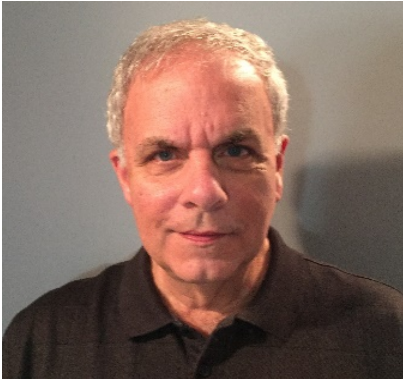
Rock Falls Community Center  
601 W. 10<sup>th</sup> Street, Rock Falls, IL

**Tri-County HAMFEST 2020 – Sun., March 15<sup>th</sup>, 8:00 AM**

Jefferson County Fair Activity Center  
503 N. Jackson Ave., Jefferson, WI

# Vintage Amateur Radio

de Bill Shadid, W9MXQ



This article continues the presentation of popular, and not so popular, 811 and 811A Triode Amplifiers. In this installment we find some could amplify in Class C for more efficiency in CW operation.

The amplifiers in this article all make use of the 811A Triode. The first installment noted improvements over the original 811 Triode with respect to plate dissipation. That is, 50 watts for the 811 compared to 65 watts for the 811A.

The products shown here were primarily from the 1950's with manufacturing extending into the mid-1960's and one other one that reached to 1974. All the amplifiers here can be found today, still operating in many cases with modern transmitters and transceivers. Major differences comparing all amplifiers in this article to modern versions would include their ability to work with exciters of today that require low current transmit/receive switching.<sup>1</sup>

The amplifiers in this grouping include models from the major players in the post WWII era. To be sure, others were making amplifiers but with different tubes. We will talk here about Hallicrafters, E. F. Johnson, Gonset, Collins, and Heathkit. The Heathkit amplifier here was part of a series on Heathkit amplifiers but is included again because of its use of the 811A in this model. The same goes for the Collins entry in this article.

First of this group will be the Hallicrafters HT-31 Linear Amplifier. Hallicrafters made this medium power amplifier from 1955 through 1966.

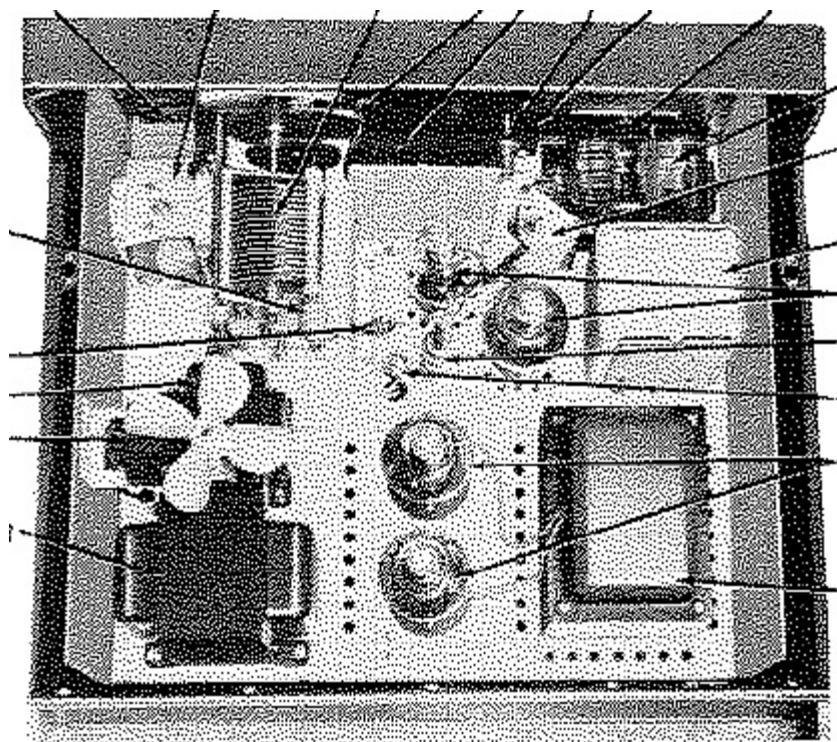


**Hallicrafters HT-31 Linear Amplifier  
(Hallicrafters HT-31 Mark I  
Operating and Service Manual)**

This picture does not do this monster credit. It has rather large desktop dimensions of 20" across the front, 12-1/4" tall, and 17-1/4" deep. It weighed in at 92 pounds. This with two 811A

Triode amplifier tubes running an input power of 510 watts, maximum. Output power on SSB could be expected to be about 330 watts PEP with somewhat less on CW.

There were other technical features of the HT-31 that were important. Those included a very robust power supply more than capable of keeping the HT-31 running continuously for hours on end. The power supply was a full-wave rectifier using two 866A Mercury Vapor Rectifiers. These 866A tubes and the two 811A finals were the entire tube compliment of the radio. The HT-31 used a continuously tuned inductor in its tank circuit that allowed continuous tuning from 3.5 to 30 MHz. That said, an HT-31 would work well on today's 80-10 meter bands, including the 60, 30, 17, and 12-meter bands (only where their power output would be legal). Here is an inside view of the HT-31 – with the front panel at the top of the picture. Due to resolution considerations you can see the callout lines but not the component descriptions from this HT-31 Operating and Service Manual picture:



#### **Hallicrafters HT-31 Linear Amplifier (Interior View)**

See 866A Rectifiers at bottom center with 811A Finals just above. The rather minimal cooling was provided by the small fan mounted over the power supply choke at the lower left. The tank circuit rotary inductor is visible just over the top from the fan. For the record, that fan is the limiting factor in power – not the tubes or power supply.

**(Hallicrafters HT-31 Mark I Operating and Service Manual)**

The HT-31 required very low drive to attain its specification 510 watts input power. That input power ranged from 8.5 watts on 80-meters up to 25 watts at the high end of 10-meters.

The HT-31 was designed as a stable mate to the first Hallicrafters tabletop SSB Exciter/Transmitter, the HT-30. Check for my article on the Hallicrafters HT-30 for more details of the HT-31's initial pairing with the HT-30 Exciter and the SX-100 Receiver. Very early stations in this installation used the SX-96 Receiver – a fine radio for its time but not up to the capabilities of SSB provided by the SX-100.



I have operated the HT-31 and even had one in my shack many years ago. As was, and is, typical of Hallicrafters, it was easy to use and operated without problems with a wide variety of antenna configurations and impedances. Hallicrafters noted that at 285 watts output, the HT-31 could provide the same “talk power” as a 1,000-watt AM transmitter<sup>2</sup>.

The capable and stable HT-31 Linear Amplifier was marketed for several years after the removal of the HT-30 from the market. In those days it was not as important to the average ham to have all the pieces of his station from the same manufacturer. So, that noted, the HT-31 sold well as an amplifier to work well with the low powered SSB Exciters of the day, such as the Central Electronics 10A, 10B, and 20A, the Lakeshore II, II-A, and II-B, and the Eldico SSB Jr and SSB-50 – as well as others lost, for now, to history. Comments in this paragraph apply to other 811A amplifiers in this era as well,.

Here is an interesting adaptation of the Hallicrafters HT-31 Amplifier, HT-30 Exciter, and SX-100 Receiver. Hallicrafters marketed this package for a very short time (only a few exist) under the model name SR-500. This is not to be confused with the later marketed SR-500 SSB/CW Transceiver.



This is the Hallicrafters SR-500 Console. Note top left is the HT-30 Exciter. Top right is the SX-100 Receiver. Right below the HT-30 and a control panel is the HT-31 Amplifier. Note also the work shelf with the microphone. Behind screens are speakers that are not correct for the period.

Sitting to the right of the console is a Collins KWS-1 sitting atop its power supply console.

**(Property of N9CQX)**

The Johnson Courier came on the market about two years after the Hallicrafters HT-31 and seemed to one up the Hallicrafters with similar features in a smaller, lighter package. The Courier is the same size (perhaps even same cabinet) as the very popular and desirable Johnson Ranger Transmitter. The desktop, completely self-contained Courier was 15” wide by 9” high by 11-5/16” deep. It weighed a modest 58 pounds – hardly approaching the 92-pound HT-31. Power capability of the Courier is as follows:

Mode	Plate Power Input
CW (Class C or Class B)	500 watts
AM Linear (Class B)	200 watts
SSB / DSB (Class B)	500 watts (PEP)

You will note that I hesitated to call the Courier a “Linear” Amplifier because it can operate Class C on CW. Class C can be 75% efficient and provide 375 watts output on CW whereas operating Class B would be more like 250 watt, or about 50% efficiency (perhaps as much as 60%). In this group of amplifiers, two are my favorites for desktop appearance and ability to efficiently do its work. One of them is the E. F. Johnson Courier Amplifier:



**E. F Johnson Courier Amplifier  
(E. F. Johnson 1961 Amateur Radio Catalog)**

The large vertical readout panel just to the left of center (left of the large plate tuning inductor knob) indicates one of this amplifier's features – it tunes continuously from 3.5 to 30 MHz. Like the Hallicrafters HT-31, the Courier would work well on today's 80-10 meter bands, including the 60, 30, 17, and 12-meter bands (only where their power output would be legal). On the 3.5 MHz band, the antenna loading is wide range from 18 to 600 ohms, unbalanced. On 7 MHz and above the matching can deal with as much as 20 to 2,000 ohms, unbalanced. Those are aggressive numbers – but Johnson gear was known for being widely adaptive to antenna loads.

The Courier has four tubes – the two 811A Triode amplifiers plus two 866A Mercury Vapor Rectifiers that were used as full wave rectifiers in the high voltage power supply. The grid driven finals required 5 to 35 watts of drive, depending on frequency and mode.

This amplifier has many memories for me. When I decided to purchase a Johnson Valiant for my first transmitter, in 1964, I had carefully studied a setup of the Ranger and Courier as an alternative for a lot of reasons – not the least of which the desire to see the beautiful Courier on my desk. In the end, however, the Valiant won out. But as AM faded over the next few years it might have been nice to have had the Courier to use with an SSB Exciter.

For reference, here is the Johnson Courier next to its logical partner, the Johnson Ranger:



**Johnson Viking Ranger**



**Johnson Viking Courier**

**(E.F. Johnson 1957 Catalog)**

Faust Gonsset, W6DIZ, was one of the most prolific designers and manufacturers in the United States. Many stations in the 50's and 60's had a Gonsset Communicator. Those VHF and UHF

AM radios were the main stay of emergency communications in those days. But, while Gonset was rich in VHF and UHF product offerings, they also played in the HF world as well.

Gonset designed, produced, and marketed two 811A Linear Amplifiers from 1958 to 1961 (GSB-101) and from 1961-1968 (GSB-201), from 1968-1969 (GSB-201 Mark II).



**Gonset HF Linear Amplifiers**  
**GSB-101 Linear Amplifier      GSB-201 Linear Amplifier**  
**(Gonset Product Literature)**

The GSB-101 Linear Amplifier used four 811A Triodes in a grounded-grid driven circuit. This is a departure from the grid driven 811A pairs we have seen in this article. The drive could be 80 to 100 watts. Too much drive here would drive the 811A's into distortion so best to stay under 100 watts. These amplifiers used two 866A Mercury Vapor Rectifiers in a full wave circuit.

The GSB-101 is big and heavy – there is no getting beyond that. It is 19-3/4” wide by 11” high x 14-5/8” deep. Estimated weight is 95 pounds.

<b>Gonset GSB-101 Linear Amplifier Performance Specifications</b>		
<b>Mode</b>	<b>Input</b>	<b>Output</b>
PEP SSB	1,200	800
CW	900	700
AM	400	160

I had a GSB-101 for several years in the mid-1960's. It is well made and effective but is unforgiving in tuning and a bit cantankerous as it approaches its impedance tuning range. This may be unfair of me to conclude considering my antennas of the time. Chances are that one of these found in good condition would run nearly forever.

My experience with the GSB-101 and with its mate, the Gonset GSB-100 SSB/CW/AM Exciter/Transmitter dates from the 1960's<sup>3</sup>.



Here are the Gonset GSB-100 Exciter and GSB-101 Linear Amplifier.

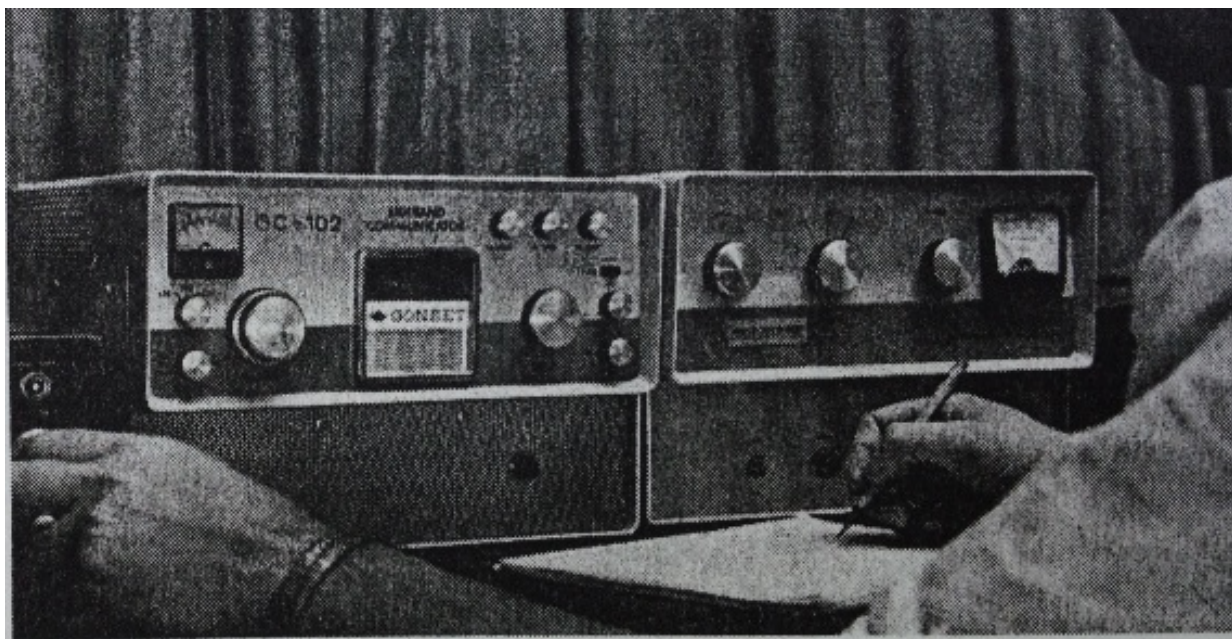
Very similar in electronic design but distinctly different physically is the GSB-201 Linear Amplifier. It is an upgraded GSB-101 and, as such, performed similarly. However, note addition of RTTY in the specifications. An improved power supply was key. The GSB-201 and GSB-201-Mark II used four 811A finals but used a solid-state full wave bridge rectifier.



<b>Gonset GSB-201 Linear Amplifier Performance Specifications</b>		
<b>Mode</b>	<b>Input</b>	<b>Output</b>
PEP SSB	1,500	1,000
CW	1,000	675
AM	400	160
RTTY	750	400

As noted above, the GSB-201 physically different at 12-5/8" wide by 8-1/2" high by 17-5/16" deep. It weighs 81 pounds.

The GSB-201 was restyled to match Gonset's new HF SSB Transceiver, the GC-102 Communicator<sup>3</sup>. It was never produced in high volume (but, they occasionally appear at a hamfest). Given Gonset's success in the previous G-76 AM/CW Transceiver<sup>3</sup>, it seems a shame that Gonset was unsuccessful in replacing it with the GC-102. Here is how the GC-102 / GSB-201 pair appeared at the market release of the GC-102:



**Gonset GC-102 HF SSB/CW Transceiver & GSB-201 HF Linear Amplifier  
(Gonset Sale Literature)**

The GC-102 used a bolt-on power supply that fit under the radio and became a desktop riser. Now you can see the styling concept extended to the GSB-201 Linear Amplifier, which was one complete and open cabinet, inside, to accommodate the vertically mounted, tall, 811A tubes.

I must add here that the GSB-201 went onward in models to the Mark III and Mark IV models. Those were more powerful by virtue of their use of the 572B/T160L Triodes. Those triodes, based on the 811A, have a plate dissipation of 160 watts – more than double the 65 watts in the 811A. Also, in closing, did you notice in here that Gonset did not use the same spelling as the man's name (Gonset Company vs Faust Gonsett).

Our next 811A amplifier was covered in a previous installment documenting the many amplifiers designed and marketed by Heathkit. In this case, we have the Heathkit HA-10 Warrior Linear Amplifier. It shows a lot of resemblance to the mechanical and electrical design of the Gonset GSB-101. Check these numbers and compare with the GSB-101.

The HA-10 Warrior is a large and heavy. It is 19-1/2" wide by 11-5/8" high by 16" deep and weighs a table-groaning 90 pounds.

The HA-10 uses a grounded grid configuration with its four 811A tubes. Like other amplifiers of its vintage and power level, it uses a pair of 866A Rectifier tubes in a full wave rectifier circuit. Drive level for its operation on the 80-10 meter bands is 80-100 watts. More drive is detrimental to signal quality.

This is the Heathkit HA-10 Warrior information:

<b>Heathkit HA-10 Warrior Linear Amplifier Performance Specifications</b>		
<b>Mode</b>	<b>Input</b>	<b>Output</b>
PEP SSB	1,000	600
CW	1,000	600
AM	400	160
RTTY	650	300

Here you can see the physical appearance of the Heathkit HA-10 Warrior.



**Heathkit HA-10 Warrior Linear Amplifier  
(Heathkit Sales Literature)**

In closing on the Heathkit HA-10 Warrior, here it is with to its partners from Heathkit, the HX-10 Marauder SSB/AM/CW Transmitter<sup>3</sup> and the RX-1 Mohawk SSB/AM/CW Receiver<sup>3</sup>:



**The Heathkit Indians – as they were known back in the day**

**Heathkit HA-10  
Warrior Amplifier**

**Heathkit RX-1  
Mohawk Receiver**

**Heathkit HX-10  
Marauder Transmitter**

You may note two things that collectors notice about this trio . . .

1. The colors don't match. While colors can vary it is also well known that color control on the green Heathkits – up to and including the SB-series – was terrible.
2. Sharp eye will notice that the HA-10 Warrior and the HX-10 Marauder were made after Heathkit's corporate acquisition by Daystrom Company and the move to show that rela-

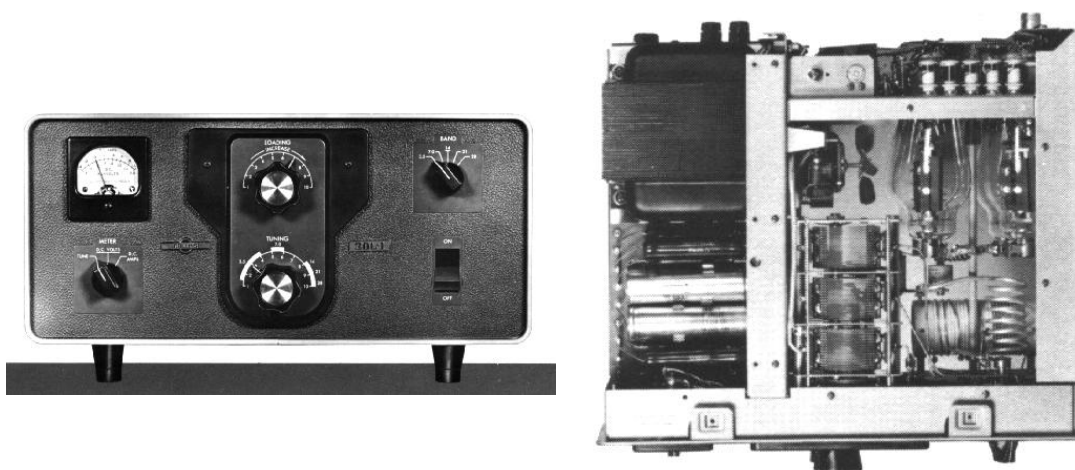


tionship on the products. Note the Black and Red Heathkit-Daystrom Logo on the HA-10 Amplifier and HX-10 Transmitter. The RX-10 Receiver here was branded strictly Heathkit. The truth is that all these products were under Daystrom ownership.

The final model in this article, the Collins 30L-1, is certainly my favorite for function, appearance, and all-around performance. As my readers know, I have and use many pieces of equipment. For Amplifiers, I have Drake, Collins, Hallicrafters, Heathkit, National, and Ameritron models. The Collins 30L-1 is a standout – while freely admitting that the automatic tuning and band switching Ameritron ALS-1300 is the most often used! The very fact that it is totally lacking in need for any human attention or interface is a negative for this hardware geek.

The Collins 30L-1 was introduced shortly after its partners, the Collins S-Line Receivers, Transmitters, and Amplifiers in 1961. The 30S-1 Linear Amplifier, a large, floor mounted unit, was introduced first, 1959, along with the Receivers and Transmitters.

Here is the classic 30L-1 Linear Amplifier:



**Collins 30L-1 Linear Amplifier**  
**Front View**                      **Top View (front at bottom)**  
**(Top RF Shield is removed)**  
**(WA3SAY Photos)**

The 30L-1 has four 811A Triodes that can be seen at the right center of the Top View. These are mounted two over two – so you only see the top two in this picture. The fan assembly is upper center and blows air across the tubes for what has historically been effective cooling in this amplifier.

Remember from past coverage of this amplifier that it uses horizontally mounted 811A Triodes. Those require sourcing with horizontal mounting in mind when the tubes were manufactured<sup>4</sup>.

Here are some performance numbers on the 30L-1:

<b>Collins 30L-1 Linear Amplifier Performance Specifications</b>		
<b>Mode</b>	<b>Input</b>	<b>Output<sup>5</sup></b>
PEP SSB	1,000	600
CW	1,000	600

The Collins 30L-1 uses grounded grid RF input design and thus needs about 80-100 watts of RF drive from the exciter. Unlike all the others in this group, however, the input circuitry in the 30L-1

insures a 50-ohm impedance for the exciter. While this was not as critical at the time of all these products, it was true of the Collins S-Line Transmitters and Transceivers. That point makes the 30L-1 one of the best partners to use with modern, solid-state exciters. Speaking of partnering with modern radios. The 30L-1 works continuously from 3.5 to 30 MHz in five ranges. One caveat on this statement is that the ranges set on the input coils mentioned are set for the 80, 40, 20, 15, and 10-meter bands. Using the amplifier on 17 and 12 meters, for instance, may require adjustment of the appropriate input tank coil (15-meter coil for 17-meters and 10-meter coil for 12-meters). This has not been my experience, however, on my 30L-1 being driven a set of Drake C-Line Twins (R-4C and T-4CX) on both 17 and 12 meters.

Here are a couple of 30L-1 installations at W9MXQ:



**Collins 32S-3 and 75S-3B with 30L-1  
(W9MXQ)**



**Cubic Astro 103 with Collins 30L-1  
(W9MXQ)**

How many of you run a new, or an old, or recent, 811A Amplifier? I guess it counts if you just have one on the shelf – but radios on the shelf that are not working are the sign of perhaps another kind of article. Let me know about your 811A amplifiers. This article brought back a lot of memories of past projects. I have built (“homebrewed”) three 811A amplifiers over time. One was converted to 572B<sup>6</sup> Triodes but lives on – in use to this day at a ham station on Ohio.

Mentioned early in this article is the reference to needing to switch the high current transmit/receive relay and/or cut-off bias circuitry in these amplifiers<sup>1</sup>. I cannot emphasize this enough – you **WILL** damage your modern exciter by not heeding the warning here and in reference 1, at the end of this article. See Comments and Credits.

I appreciate that you read my articles. Remember that I am open to questions and comments anytime at my email address, [W9MXQ@TWC.com](mailto:W9MXQ@TWC.com).

A special note of thanks to my proofreader, Bob Bailey, W9DYQ. Bob is a bit more than a proofreader as he often adds commentary that makes it into the article.

### **Credits and Comments:**

<sup>1</sup> All the amplifiers in this article required high current at high voltages to switch between transmit and receive. That was no problem for transmitters and transceivers of that same era. Modern exciters, however, can only accommodate low voltages at very low current. Interface units are available from several manufacturers for this purpose as well as modification circuitry for the amplifier to make it compatible with modern radios. I reference but am not limiting you to the Ameritron ARB-704 for this purpose. See <http://www.ameritron.com/Product.php?productid=ARB-704> for details. Other options exist including modifications to the amplifier itself. Some large chassis Yaesu radios have internal relays that can be activated in menu to provide interface with older amplifiers. But, be sure the current draw from the amplifier is not too high for even that relay. If you do not know how to measure the required current, buy the Ameritron ARB-704, or one of the several competing units.

<sup>2</sup> Hallicrafters HT-31 Mark I Operating and Service Manual, page 2, “GENERAL DESCRIPTION.”

<sup>3</sup> Subject of a future article.

<sup>4</sup> The proper 811A tubes for horizontal mounting are available from RF Parts. You can access them at their website, <https://www.rfparts.com/>. It is best to call their phone number (shown on the website) and talk to them in person. It is not a given that all the 811A tubes shown are acceptable for this use. This concern does not apply to other amplifiers in this article.

<sup>5</sup> Collins rated the 30L-1 for continuous voice modulation – no off cycle – on SSB. On CW, however, they note in the 30L-1 Instruction Book, “50-percent duty cycle (continuous key-down conditions not to exceed 30 seconds duration).” None of the other amplifiers provide duty cycle ratings. For explanation, the Collins 30L-1 was sold to the US Military and to the US Department of State. Embassies often had Collins S-Line stations for back-up communications. The US Department of State used Collins S-Line, Drake C-Line, and Radio Engineering Labs (REL / Reliant / Eldico) clones<sup>3</sup> of the Collins S-Line at any given time.

<sup>6</sup> The 572B Triode – also referenced as a T-160L or the 572B/T160L is an updated version of the 811A with a carbon anode allowing up to 160 watts of plate dissipation compared to 65 watts with the 811A. While there are some minor electrical differences, the 572B is essentially a plug-in replacement for the 811A.

**W9MXQ**

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## Ozaukee Radio Club

### January 8, 2019 Meeting Minutes

de Ben Evans K9UZ



President Kevin Steers (K9VIN) called the meeting to order at 7:31 PM. All the attendees introduced themselves.

#### **Announcements, Show-and-Tell, Bragging Rights:**

Jim (K9QLP): Regrets to report that former long-time member Ron Yokes (W9BCK) passed away this morning. His son Randy called this afternoon and said Ron had a pretty rough week. He did have a good Christmas with his family. In December, Ron donated a tube from Channel 6's early days of color television which Ed Rate (AA9W) is in possession of now. He had a productive career with RCA, selling TV antennas, transmitters and studio equipment. Ron goes way back in ham radio and is one of the founding members of the ORC and helped get it organized.

Tom T. (KC9ONY): The Armstrong family (six of them) went to HRO to take tests, some for the first time and others to upgrade, and all of them passed.

#### **Elections for 2020 Officers:**

Nominations Chair Ken (W9GA) conducted the officer elections, which was in place of a program.

The following members were running unopposed for the offices specified:

President – Pat Volkmann (W9JI)  
First Vice President – Ben Evans (K9UZ)  
Second Vice President – Bill Church (KD9DRQ)  
Repeater Vice President – Tom Trethewey (KC9ONY)  
Secretary – Ken Boston (W9GA)  
Treasurer – Gary Bargholz (N9UUR)

Mike Harrington (KD9GCN) had agreed to become Treasurer while still holding the position of Trustee, until it was realized that the by-laws prohibited anyone from holding two offices at the same time, so Gary (N9UUR) stepped up to run for Treasurer.

There were no additional nominations from the floor. Stan (WB9RQR) moved to close the nominations, which was seconded and passed. Jim (K9QLP) moved that the secretary cast a unanimous ballot for the slate of nominees as read by Ken, which was seconded and passed unanimously.

Ken pointed out that at the next meeting in February, there will be elections for Ham of the Year and Turkey of the Year for 2019. Ham of the Year may be awarded to a member more than once, but not so for Turkey of the Year. Ham of the Year is a member of the club who has exhibited leadership skills and has been helpful to others. Turkey of the Year is someone who has provided "comic relief" during the past year. Ken urged members to think about who they'd like to vote for as Ham and Turkey of the Year. Ballots will be handed out at the February meeting for the awards which will include lists of past recipients. There are many other awards that members can vote on, particularly the presenter of the Best Program of the Year and Operator of the Year.

#### **Auction:**

Stan (WB9RQR) conducted the auction. Many items were sold, including two bag of 12V fans, a toroidal transformer, Altec Lansing speakers, a bag of toroids, a Linux-loaded desktop computer, DVR equipment, antique WWI headphones, and a painting by Julia (KB9WBQ) of a past ORC field day and depicting Bob Truscott (W9LO-SK) (which will be featured in an upcoming QST magazine issue).

#### **Officer Reports:**

Kevin S. (K9VIN), President – No update.

Pat V. (W9JI), 1st VP – No report.

Bill C. (KD9DRQ), 2<sup>nd</sup> VP – No report.

Tom T. (KC9ONY), Repeater VP – Was authorized to look for a new amplifier for the 2-meter repeater. Researched a couple brands, one is TPL which has evidently gone out of business. Also looked at Crescend in Schaumburg, Illinois. The list price for the Crescend150-watt amp is \$2,200, but could be purchased wholesale for \$1,600. Tom recommended to the members that the club buy this amp. Jim (K9QLP) moved to recommend the purchase of this particular amp to the board for consideration, which was seconded by Jeananne (N9VSV) and approved by the members.

Ben E. (K9UZ), Secretary – The link to the minutes from December's meeting was emailed to the members. Motion to accept the minutes was made by Stan (WB9RQR), seconded by Bill C. (KD9DRQ) and passed. The newsletter will be available in the coming weekend.

Robert E. (K4WTH), Treasurer – Robert passed out the treasurer's reports for December and a proposed budget for 2020-21. Funds in Educators Credit Union totalled \$38,037.15 and the amount in Cornerstone Bank was \$17,782.61. If you haven't paid your dues yet for 2020, please do so. You can pay by PayPal, cash or check, or credit card renewals can be taken at tonight's meeting. Anyone who paid with PayPal as of 3:00 PM today is considered a member in good standing. Stan (WB9RQR) questioned what the PayPal purchase errors noted in the report was about. Robert said there were PayPal purchases that were charged to the wrong account, so he reimbursed the total amount of the purchases to the wrongly charged account from the account that was meant to be used for the purchases. Motion to accept the treasurer's report was made by Ken (W9GA), seconded by Jeananne (N9VSV) and approved by the members. Regarding the proposed budget, Robert made the following points: 1) A monthly expenditure was created based on past records under former treasurers Nels (WA9JOB) and Dave Barrow (N9UNR), the last half of 2018 and the full 2019 year. 2) The yearly expenditure for the repeater averages \$1,000 or more. There is a contingency fund for

future maintenance of the repeater for annual amounts exceeding \$1,000. 3) There are expense line items for the major events such as Spring Swapfest, Field Day and Fall Swapfest.

Stan (WB9RQR) asked when the account signatures will be switched over. Kevin (K9VIN) responded that he'll work with the new Board to get people to the bank and change the names. Robert will work with Gary (N9UUR) to get him up to speed with what needs to be done.

**Committee Reports:**

There were no committee reports.

**Old Business:**

There was no old business.

**New Business:**

Tom (KC9ONY): We need a new chairman for the Spring Swapfest immediately. Tom is considering taking on the job himself, but will only do so if no one else will. The date of the Swapfest is usually the first Saturday in May, this year being May 2<sup>nd</sup>. Ken (W9GA) questioned whether Loren (N9ENR) could come back and run the swapfest again or at least help out, but Kevin (K9VIN) suggested that all Loren is willing to do, after years of running the swapfest, is pass out flyers at other swapfests and take a few orders for tickets and tables, which he has been doing since he stepped down as chairman. Question by Kevin: Do we have a reservation for that date at the Curling Center? Ben (K9UZ): They usually keep that date open for us every year. Ben will contact Mary at Ozaukee County and inquire.

**Adjournment:**

A motion to adjourn the meeting was made by Stan (WB9RQR), seconded and passed. The meeting was adjourned at 8:33 PM.

**Attendance:**

There were 31 members and 6 guests present at the meeting.

A copy of the attendance sheet is available upon request in PDF format. Please contact Ben Evans via email at [ben@evansengsolutions.com](mailto:ben@evansengsolutions.com) for a copy.

Respectfully submitted,



B. Benjamin Evans, K9UZ  
Former Secretary



## **ORC Meeting Agenda**

*February 12, 2019*

1. 7:00 – 7:30 PM – Network & Rag Chew
2. Call to Order – President Pat Volkmann (W9JI)
3. Introductions
4. Announcements, Bragging Rights, Show & Tell, Upcoming Events, etc.
5. Program: Bill Shadid W9MXQ, Video Presentation on R.L. Drake Company
6. Fellowship Break
7. 50/50 Drawing
8. Auction – Stan Kaplan (WB9RQR)
9. President's Update – Pat Volkmann (W9JI)
10. 1<sup>st</sup> VP Report – Ben Evans (K9UZ)
11. 2<sup>nd</sup> VP Report – Bill Church (KD9DRQ)
12. Repeater VP Report – Tom Trethewey (KC9ONY)
13. Secretary's Report – Ken Boston (W9GA)
14. Treasurer's Report – Robert Eskola (K4WTH)
15. Committee Reports
16. OLD BUSINESS
17. NEW BUSINESS
18. Adjournment to ?

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### **The ORC Newsletter**

524 Alta Loma Drive  
Thiensville, WI 53092

### **First Class**

#### **Next ORC Meeting:**

Grafton Multipurpose Senior Center

1665 7<sup>th</sup> Avenue, Grafton, WI  
Wednesday, February 12<sup>th</sup>, 2019

7:00 PM – Doors Open

7:30 PM – Meeting Begins